NOVEMBER/DECEMBER 2023

CEEL62B/BEEL62B — DIGITAL SYSTEM DESIGN

Time : Three hours Maximum : 75 marks

SHANMUGA INDUSTRIES ARTS & SCIENCE COLLEGE
LIBRARY

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. State associative law.

2. What are binary codes?

3. What are called combinational circuits?

4. Define carry look ahead logic.

5. What is encoder?

6. Mention the feature of magnitude comparator.

7. What is multiplexer?

8. What are called are combinational circuits?

9. What is flow table?

10. What is excitation variable?

705

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Implement the following Boolean expression with exclusive – OR and AND gates: $F = AB'CD' + A'BC\ D\ '+ AB'C'D + A'BC'D$.

Or

(b) Explain the logic gates.

12. (a) Describe the design procedure of combinational circuits.

Or

(b) Discus the binary subtractor.

13. (a) Explain the implementation of a full adder with a decoder.

Or

(b) Describe the maps for a priority encoder.

14. (a) Outline the analysis procedure of synchronous sequential circuits.

Or

(b) Enumerate the reduction of state and flow tables.

SHANMUGA INDUSTRIES ARTS & SCIENCE COLLEGE LIBRARY

15. (a) Derive a primitive flow table.

Or

(b) Elucidate the 3-Row Flow Table with example.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Simplify the following Boolean functions using Karnaugh map

$Y = A'B'C'D' + A'B'CD' + AB'C'D' + AB'CD'$

17. Design a combinational circuit that converts a four-bit Gray code to a bit four binary number.

18. Explain: Gate-Level Modeling.

19. Describe the binary ripple counter.

20. Discuss the latches in asynchronous circuits.
